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# Short selling pressure and corporate social responsibility performance

Louise Yi LU

Yangxin YU

Liandong ZHANG
*Singapore Management University*, ldzhang@smu.edu.sg

# Short Selling Pressure and Corporate Social Responsibility Performance: Evidence from a Natural Experiment

Louise Yi Lu
*Australian National University*
*louise.lu@anu.edu.au*

Yangxin Yu
*City University of Hong Kong*
*yangxin.yu@cityu.edu.hk*

Liandong Zhang
*City University of Hong Kong*
*liandong.zhang@cityu.edu.hk*

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## Abstract

Using Regulation SHO as a natural experiment, we show that managers respond to a positive exogenous shock of short selling pressure by enhancing corporate social responsibility (CSR) performance. The positive effect of short selling on CSR is mainly driven by improvements in stakeholder CSR, rather than third party CSR; and by improvements in CSR strengths, rather than reductions in CSR concerns. We further find that the effect is more pronounced for firms that locate in environments where CSR is emphasized by their stakeholders. Moreover, we find that managers are more likely to issue CSR reports that convey information about firms' CSR activities to the public during the implementation of Regulation SHO period. Overall, our evidence is consistent with our conjecture that managers use CSR strategically to deter short sellers by creating a positive image of the firm.

# Short Selling Pressure and Corporate Social Responsibility Performance: Evidence from a Natural Experiment

## 1. Introduction

Short selling is important in the U.S. stock markets. Despite being important contributors to efficient stock pricing due to their information advantages, short sellers are generally unwelcome by firm managers. The headlines of the business press are often dominated by disputes between managers and short sellers. A recent survey by NYSE finds that most CEOs blame short selling for reduced share price and the resulting negative effects on investor confidence (NYSE, 2008). Moreover, Khanna and Mathews (2012) argue that "the damage of short-selling is caused not so much by the initial drop in stock price, but through its feedback effect on the real decisions of the firm's counterparties since that not only amplifies the firm's price drop but also makes it more permanent".

Given these expected costs associated with short selling for firms, managers have incentives to take action to discourage short sellers and to mitigate the potential impact of short selling on the firm. However, research on how firms respond strategically to short selling pressure is limited. Some studies examine the use of legal action (Lamont, 2012), stock repurchases (Liu and Swanson, 2011), insider stock purchases (Laksanabunsong and Wu, 2014), and management forecasts (Li and Zhang, 2015) to deter and/or counter the effect of short selling. The present study focuses on firms' non-financial performance, a hitherto unexplored response to short selling. Specifically, we examine how managers respond to short selling pressure by altering their performance in corporate social responsibility (CSR).

CSR has become a major phenomenon among U.S. firms over the past several decades. Many firms have expressed CSR commitments, initiated CSR projects, and issued CSR reports. While the literature on whether CSR increases firm value is largely divided (see Margolis et al., 2007 for a review), the literature tends to agree that CSR creates a positive firm image (Fombrun and Shanley, 1990; Luo and Bhattacharya, 2006; McWilliams et al., 2006). The general view is that firms with good CSR fulfill an ethical obligation to their stakeholders and to society, and this ethical obligation constrains corporate involvement in unethical activities. Consistent with this view that positive image is associated with ethical corporate behavior, several studies find that firms with good CSR engage in less real or accrual earnings management, are less likely to be subject to Securities and Exchange Commission (SEC) enforcement action (Kim et al., 2012), are less tax aggressive (Lanis and Richardson, 2012; Hoi et al., 2013), and exhibit lower incidence of insider trading (Gao et al., 2014).

A number of studies suggest that firms can benefit from a positive corporate image in various ways, including attracting talent and charging customers or investors premiums (Greening and Turban, 2000; Richardson and Welker, 2001; Lev et al., 2010). Recent studies show that the positive image created by engaging in CSR can help firms buffer against the impact of future negative events. For example, Minor and Morgan (2011) show that firms with better CSR ratings experience smaller stock price drops when they announce product recalls. Hong and Liskovich (2015) argue that CSR generates a halo effect, which results in CSR firms incurring lower fines from corrupt activities.

Drawing on this research, we argue that, in response to increasing short selling pressure, managers have incentive to create a positive firm image by enhancing CSR

performance. This is because short sellers profit from stocks where they expect the stock price to decline through uncovering bad news about the firm. If a firm's engagement in CSR indicates less unethical behavior that may cause a future drop in share price, and/or it suggests lower future impact of bad news on its stock price, short sellers may be deterred from taking positions against the firm, since there will be less profit when the short selling position is closed. This conjecture requires only that managers believe that positive firm image can deter short sellers or mitigate the potential drop in share price on bad news discovery. This belief appears to be reasonable. A recent survey suggests that practicing CSR can influence public perception of a firm's behavior and help the firm rebuild trust and regain credibility.[1] Moreover, anecdotal evidence suggests that demonstrations of good-faith effort can mitigate potential losses from adverse events. For example, if a firm's good-faith effort at safety compliance can be shown by their effort in Occupational Safety and Health Administration (OSHA) related CSR issues, such as safety training and consistently enforced safety rules, penalties may be reduced by OSHA.

Admittedly, it is possible that, rather than enhancing CSR performance, managers may cut firms' efforts in CSR when facing increasing short selling pressure, for two reasons. First, CSR is a long-term investment with uncertain returns to firm values (Friedman, 1970; Fieseler, 2011). Short selling could create tremendous price pressure on a firm's stock (e.g., Mitchell et al., 2004). As a consequence, managers who care about short-term stock prices or operating performance may cut CSR spending and focus more effort on routine tasks that offer faster and more stable returns. Second, it is possible that managers invest in CSR for their own self-interests (Barnea and Rubin, 2010; Friedman,

[1] For instance, Adam Friedman Associates (2012) survey CSR executives at Fortune 1000 firms and identify reputation building as the primary motivation behind CSR initiatives.

1970). Since short sellers can discipline managers by monitoring their actions through short selling, a mismanaged firm facing increasing short selling pressure may have incentives to cut firms' efforts in CSR. While ultimately an empirical question, these latter arguments are likely to bias our results against our directional prediction, that is, facing increasing short selling pressure, managers enhance firms' CSR performance.

To test our prediction, we exploit a natural experiment based on SEC regulation SHO (Reg SHO). Short selling activities in the U.S. had been largely constrained. The uptick rule, which had been in place from the 1930s to July 2004, prohibits short sales when stock prices are declining, significantly impeding the execution of short sales. In July 2004, the SEC announced a pilot program under the Rule 202T of Reg SHO temporarily removing the uptick rule restriction for an ex ante randomly selected pilot group of firms (about one-third of the Russell 3000 firms listed on NYSE, NASDAQ, and AMEX) from May 2, 2005 to August 6, 2007. This sudden regulatory change significantly reduced the cost of short selling, thus increasing short selling pressure only for these pilot firms, but not for non-pilot firms (the remaining two-thirds of the Russell 3000).

This combination of the randomization of the pilot firms and an exogenous shock to the short selling constraint creates a clean setting in which to examine the effect of short selling pressure (as affected by short selling constraints) on a firm's CSR performance. In particular, this experiment emphasizes how firms respond when they experience the mere threat of an increased likelihood of being shorted (an increase in short selling pressure), which does not require these firms to experience actual increases in short selling activity. Using a differences-in-differences (hereafter, DiD) regression

approach, we analyze the impact of short selling pressure on firm's CSR performance. Consistent with prior studies, firm's CSR performance is measured by total CSR score, constructed from the MSCI STATS database.[2] We find that an increase in short selling pressure due to Reg SHO leads to a larger increase in CSR performance for the treatment (pilot) group compared to the control (non-pilot) group. Our results are robust to various alternative measures of CSR and to controlling for firm fixed effects. These results are in line with our prediction that, facing increasing short selling pressure, managers enhance CSR performance.

To probe more deeply how pilot firms increase their CSR performance during the pilot period, we examine the subcomponents of the total (aggregate) CSR scores. We differentiate between stakeholder CSR, which mainly concerns corporate stakeholders such as employees and customers, and third-party CSR, which focuses on society in general. We also differentiate between CSR strengths and concerns. We find that the improved CSR performance by treatment firms is driven mainly: (1) by stakeholder CSR, rather than third party CSR; and (2) by improvements in CSR strengths, rather than reductions in CSR concerns.

We also investigate whether incentives to invest in CSR increase with the degree of CSR emphasis in the state where a firm headquarters. We find that the positive impact of short selling pressure on CSR is stronger for firms headquarter in "blue" (liberal or Democratic-leaning) states than those headquarter in "red" (conservative or Republican-leaning) states, and for firms that are subject to more rather than less religious influence.[3]

[2] MSCI STATS is the successor to Kinder, Lydenberg and Domini (KLD), Innovest, and IRRC. MSCI STATS categorizes CSR items as qualitative issues or controversial business issues.

[3] We measure religious influence using the religion ranking of the state in which the firm's headquarter is located. The religion ranking is obtained from the Association of Religion Data Archive.

These results suggest that the positive impact of short selling pressure on firm's CSR performance is more pronounced in an environment where the firm's CSR activities are emphasized by its stakeholders.

Finally, we investigate the impact of short selling pressure on a firm's likelihood of issuing CSR reports. If managers believe good CSR performance can signal their firms' overall goodness, managers may have incentive to actively convey such information to potential audiences in the market (including short sellers). We find that, during the implementation of Reg SHO, pilot firms significantly increase their likelihood of issuing standalone CSR reports compared to the control firms in the same period.

This study is related to several strands of literature. First, our study is part of the emerging literature on the real effects of secondary financial markets. Prior studies suggest that the secondary stock market has an effect on the real decisions of managers (Bond et al., 2012), including market quality (Diether et al., 2009), disclosure policies (Cheng et al., 2014; Fang et al., 2015; Li and Zhang, 2015), investment and equity issuance (Grullon et al., 2015), executive compensation structure (De Angelis et al., 2013), and corporate innovation (He and Tian, 2014). Our study shows that short selling pressure has a causal effect on managers' decisions relating to non-financial performance.

Second, we contribute to the literature on determinants of CSR. Prior studies examine the effect of various firm- and institutional-level determinants of CSR. Our study extends this line of research by showing that short sellers influence firm CSR decisions. This impact of short sellers on CSR differs from that of the other market participants. While the impact of other market participants on CSR is through their demand for CSR, the impact of short sellers is indirect and likely arises from managers'

desire to influence market perception and to discourage short sellers. In this regard, our results are also relevant to prior studies that focus on firms' strategic response to short selling.

Third, we contribute to the emerging literature on managerial strategic use of CSR. Porter and Kramer (2006) argue that CSR and business operations are interdependent, and propose that CSR is integrated into corporate policy to achieve corporate goals. Consistent with this view, prior studies examine how CSR can be used as a tool to strengthen firms' relations with corporate stakeholders to retain competitiveness (Flammer, 2014), or to manage earnings (Petrovits 2006; Chih et al., 2008). Our results suggest that managers use CSR to deter short sellers by creating a positive corporate image.

Finally, our study provides additional evidence on the effect of short selling regulations. While Reg SHO intends to test market quality (e.g., Diether et al., 2009), prior studies document unintended consequences of Reg SHO on corporate disclosure decisions (Fang et al., 2015; Cheng et al., 2014; Li and Zhang, 2015), design of CEO compensation (De Angelis et al., 2013), investment and equity issuance decisions (Grullon et al., 2015), and corporate innovation (He and Tian, 2014).

## 2. Theory and Hypothesis

### *2.1. Short selling*

Short selling represents a significant fraction of overall trading activity in the US stock markets (Diether et al., 2009). Despite the widespread belief that short selling can contribute to market efficiency (e.g., Drake et al., 2011; Engelberg et al., 2012; Christensen et al., 2014), critics claim that it brings substantial costs to the affected firms,

since short selling places immediate downward pressure on firm stock price, which adversely impacts the firm's investors' and other stakeholders' confidence. In particular, in some cases, such loss in confidence further damages long-run financing and operating activities. For example, Khanna and Mathews (2012) argue that, since a firm's counterparties' decisions may be affected by stock price, short sellers can have a real impact on these counterparties' decisions by manipulating the stock price downward. Goldstein and Guembel (2008) show analytically how a trader can be incentivized to take short positions in a firm's stock due to the impact of a sharp stock price decline on the real value of the firm. Consistent with this reasoning, a recent survey by NYSE finds that most CEOs blame short selling for reduced stock price and the resulting effect on investor confidence (NYSE, 2008). Aggressive short selling is blamed for the fall of many firms, such as Lehaman Brothers, American International Group, and Overstock.com. As pointed out by Soros (2009), "the mispricing of financial instruments can affect the fundamentals that market prices are supposed to reflect."

Considering these aforementioned expected costs associated with short selling for firms, managers have incentive to take various actions to discourage short sellers and to mitigate the potential impact of short selling on the firm. Prior research provides limited evidence on the various actions undertaken by firms against short sellers. Lamont (2012) examines the use of legal threats, investigations, lawsuits, and various technical actions intended to combat short selling. Liu and Swanson (2011) examine whether firms use stock repurchases to deter short interest. Laksanabunsong and Wu (2014) examine the use of insider purchases to counter the effect of short selling. Using Reg SHO as a setting that generates exogenous increases in short selling pressure, recent studies find that managers

respond to increased short selling pressure by reducing earnings management (Fang et al., 2015), reducing the precision of bad news forecasts (Li and Zhang, 2015), and increasing the release of good news and accelerating the release of bad news (Cheng et al., 2014). The present study focuses on firms' non-financial performance, a hitherto unexplored factor. Specifically, we examine how managers respond to short selling pressure by altering firms' CSR performance.

### *2.2. CSR*

CSR is an issue of growing interest. While there are numerous debates on whether CSR improves firm value, studies generally suggest that CSR helps firms establish a positive corporate image (Fombrun and Shanley, 1990; Luo and Bhattacharya, 2006; McWilliams et al., 2006). CSR represents the "right" courses of action that take into account not only economic, but also social, environmental, and other externalized impacts of company actions. By engaging in CSR, a firm demonstrates its commitment to ethical obligations to various stakeholders, which dissuades them from unethical corporate behavior (e.g., Porter and Kramer, 2006; McWilliams et al., 2006).

Consistent with this notion that positive corporate image is associated with less unethical behavior, prior studies find that firms with good CSR engage in less unethical behavior. Kim, Park and Wier (2012) find that firms exhibiting good CSR also constrain earnings management. These authors argue that managers are likely to be driven by ethical concerns to produce high-quality financial reports. Gao et al. (2014) show that executives of CSR firms are less likely to engage in insider trading and profit significantly less from insider trades than executives of non-CSR firms. These authors argue that firms with good corporate images tend to refrain from insider trading,

consistent with the argument in the economic literature that reputation is like an informal contract against opportunism. Lanis and Richardson (2012) and Hoi et al. (2013) document that firms with higher CSR scores are less aggressive in avoiding taxes. Hoi et al. (2013) argue that when a firm commits to social good, it often cultivates a corporate culture of "do no evil," which encompasses less aggressive tax avoidance.

A fair amount of research suggests that the positive corporate image resulting from engaging in CSR can benefit a firm in various ways, including extending organizational networks (Fombrun, 1996), attracting customers who care about CSR (Lev et al., 2010), attracting talented employees and boosting employee moral (Greening and Turban, 2000; Bénabou and Tirole, 2010), and charging socially aware investors a premium for the firm's securities (Anderson and Frankel, 1980; Richardson and Welker, 2001). Recent studies suggest that the positive image created by engaging in CSR can help firms protect themselves against the risk of adverse political, regulatory, and social penalties in case of negative corporate events (Godfrey, 2005; Godfrey et al., 2009; Minor and Morgan, 2011; Hoi et al., 2013). Godfrey (2005) theorizes that a positive CSR reputation is particularly important when negative corporate events occur, because it provides some degree of insurance protection by increasing the likelihood of positive attributions from society's arbiters. Godfrey et al. (2009) conduct an event study of 178 negative legal or regulatory actions against firms, and find that certain types of CSR can mitigate the effect of these negative events on firm stock performance. Minor and Morgan (2011) show that firms with better CSR ratings experience smaller stock price drops when they announce product recalls. Using OSHA penalties and government contract awards, Jeffers (2015) shows that officials are more lenient with penalties and more generous with awards for

good CSR firms than for bad CSR firms. Using Foreign Corrupt Practices Act enforcements, Hong and Liskovich (2015) show that bribery penalties are significantly lower for firms with high CSR levels and contend that CSR generates a halo effect, a cognitive bias, which affects prosecutors' impressions of the firms involved.

*2.3. Link between CSR and short selling*

This study examines the impact of an exogenous increase in short selling pressure using a natural experiment, Reg SHO. As discussed above, short selling brings significant costs to firms; managers may act strategically to deter short sellers and/or mitigate the negative impact of short selling. We argue that, in response to increasing short selling pressure, managers have incentives to create a positive firm image by enhancing firms' CSR performance. This is because short sellers profit on stocks for which they expect the stock price to decline after uncovering bad news about a firm. A firm's commitment to CSR indicates its effort to refrain from unethical behavior, resulting in less bad news for the short seller to discover. For example, a firm with a high CSR level commits to corporate transparency, thereby providing investors with more reliable, transparent, and timely financial information. In fact, Atkins (2006) claims that transparency is what the investing public really means by "social responsibility."

Moreover, since CSR can help firms buffer the impact of future negative effects, the adverse effect on stock price may be lower for firms with high CSR levels on discovery of bad news by short sellers. Therefore, given the potential lower likelihood of uncovering bad news and the lower magnitude of price drop due to discovery of bad news for firms with high CSR levels compared with firms with low CSR levels, the expected benefits of short selling are lower for firms with high CSR levels, compared with firms

with low CSR levels. As a consequence, short sellers may be deterred from taking positions in firms with high CSR, since there is less profit to be earned when the positions are closed. Reg SHO significantly relaxed short sale constraints on the pilot stocks, which significantly increased short selling pressure on these firms. To alleviate the increased short selling pressure, managers can improve firms' CSR performance. We thus propose and test the following hypothesis in alternative form:

**Hypothesis**: Pilot firms enhance their CSR performance relative to control firms during the Reg SHO implementation period.

On the contrary, it is also possible that managers may cut CSR efforts when facing increasing short selling pressure; thus, the null of our hypothesis would be supported. This is because CSR is a long-term investment with uncertain returns to firm value (Fieseler, 2011); facing increasing price pressure from short sellers, managers may have to cut CSR to boost short-term performance and stock price. Moreover, if some of the CSR effort is for managers' self-interests (Barnea and Rubin, 2010; Friedman, 1970), the threat of shorting shares in these mismanaged firms may motivate managers to cut these self-serving investments. While ultimately an empirical question, these arguments are likely to bias our results against our directional prediction.

## 3. Research Design

### *3.1. Sample*

On July 28, 2004, the SEC announced a pilot program in which 986 stocks from the Russell 3000 index were selected based on liquidity, volatility, market depth, and trading

volume.[4] These stocks would be allowed to trade without being subject to the provisions of the uptick rule (Rule 10a-1) and any short sale price test of any exchange or national securities association during the term of the pilot program (May 2, 2005 to August 6, 2007). The remaining stocks in the Russell 3000 Index function as the control group.

We start from a list of the Russell 3000 Index member firms and merge it with the pilot firm list announced by the SEC. We then obtain the CSR scores for the pilot and control firms from the MSCI STATS database. Finally, we merge the control variables obtained from COMPUSTAT (financial data), Center for Research in Securities Prices (stock price and volume data), and I/B/E/S (analyst following data). Following Fang et al. (2015), we set our sample period from 2001 to 2003 and 2005 to 2007[5], and delete firms in the financial services (SIC 6000-6999) and utilities (SIC 4900-4949) industries. This procedure leads to a final sample of 2,577 firm–year observations for 635 unique pilot firms and 5,389 firm–year observations for 1,380 unique control firms with non-missing control variables.

### *3.2. Empirical model*

Following Fang et al. (2015) and Li and Zhang (2015), we use firm–year observations for both pilot and non-pilot firms for the three-year window before (2001-2003) and three-year window during (2005-2007) Reg SHO's pilot program and estimate the following model:

$$CSR_{it} = \beta_0 + \beta_1 PILOT_i \times DUR_t + \beta_2 DUR_t + \beta_3 PILOT_i + \beta_4 SIZE_{it-1} + \beta_5 LEVERAGE_{it-1} + \beta_6 MB_{it-1} + \beta_7 ROA_{it-1} + \beta_8 FIRM\_AGE_{it-1} + \beta_9 LIQUIDITY_{it-1} + \beta_{10} DIV_{it-1}$$

[4] See http://www.sec.gov/rules/other/34-50104.htm for details.

[5] Unlike Fang et al. (2015), we exclude the period 2008 to 2010 in our main sample because we do not test the effect of the difference between pilot and non-pilot firms in the post-pilot period in our main test. We conduct an additional test in Section xx with the inclusion of this period.

$$+ \beta_{11} LITIGATION_i + \beta_{12} GLOBAL_{it-1} + \beta_{13} COVERAGE_{it-1} + \varepsilon_{it} \quad (1)$$

where *CSR* is the Corporate Social Responsibility score constructed based on the MSCI STATS.[6] The MSCI STATS categorizes CSR items as qualitative issues or controversial business issues. Consistent with prior studies (e.g., El Ghoul et al., 2011; Kim et al., 2012; Servaes and Tamayo, 2013; Di Giuli and Kostovetsky, 2014; Gao et al., 2014), we focus only on the qualitative issues, excluding corporate governance, in constructing *CSR*. Specifically, we calculate a firm's *CSR* as a firm's total strengths minus total weaknesses, based on MSCI's evaluations for community relations, humanity, diversity, employee relations, environment, and product characteristics.[7] Following Dhaliwal et al. (2011), we adjust the CSR scores by industry median to make them comparable across industries.

As the number of strengths and concerns change over time when MSCI STATS adds or deletes certain category, we also employ CSR measure based on Deng et al. (2013), *CSR_ADJ*, which is constructed by dividing the strength and concern scores for each dimension by respective number of strength and concern indicators to derive adjusted strength and concern scores for that dimension and then taking the difference between the adjusted total strength score and the adjusted total concern score.[8]

*PILOT* is an indicator variable that equals 1 if the firm's stock is designated a pilot stock in the Reg SHO pilot program, zero otherwise; *DUR* is an indicator variable that

[6] The MSCI STATS covers a large number of firms, and a wide range of CSR categories, and is widely used in the CSR research (e.g., Kim et al., 2012; Deng et al., 2013; Hoi et al., 2013; Servaes and Tamayo, 2013; Di Giuli and Kostovetsky, 2014; Gao et al., 2014; Dong et al., 2015). The MSCI STATS starts in 1991, with initial coverage on firms in the S&P 500 and Domini 400 Social Index, and expands to Russell 3000 firms over time.

[7] The MSCI STATS evaluates a firm's CSR performance based on the number of strength items and concern items in each category. For each category, a firm receives a score of 1 if it has the corresponding strength or concern, and 0 otherwise.

[8] For example, suppose that in 2004 the summations of the KLD strength indicators across the seven dimensions are 0, 1, 1, 2, 1, 0, and 1 and the numbers of strength indicators across the seven dimensions are 4, 3, 3, 5, 7, 4, and 4. According to our definition, the adjusted total strength score for the firm is equal to 0/4 + 1/3 + 1/3 + 2/5 + 1/7 + 0/4 + 1/4 = 1.45. If the adjusted total concern is 1.25, which is calculated in the same way as the adjusted total strength score, then the adjusted CSR score will be 1.45 - 1.25 = 0.2.

equals 1 if a firm's fiscal year-end falls between January 1, 2005 and December 31, 2007, zero otherwise. Our variables of interest are the DiD variables, $PILOT_i \times DUR_t$. A positive and significant $\beta_1$ supports that our hypothesis that pilot firms increase CSR relative to control firms during the Reg SHO implementation period.

Following prior studies on CSR (e.g., Dhaliwal et al., 2011), we include a vector of firm characteristics, which can affect a firm's CSR score. Specifically, we control for firm market value (*SIZE*), debt-to-asset ratio (*LEVERAGE*), market-to-book ratio (*MB*), return on assets (*ROA*), firm age (*FIRM_AGE*), share liquidity over the fiscal year (*LIQUIDITY*), dividend payment (*DIV*), litigation risk (*LITIGATION*), global focus indicator (*GLOBAL*), analyst coverage indicator (*COVERAGE*), and management forecast indicator (*FORECAST*). See the Appendix for more detailed variable definitions.

*3.3. Descriptive statistics*

Panel A of Table 1 presents descriptive statistics of all variables used in our sample. In Panel B we compare the firm characteristics of the treatment and control groups measured in 2003, the year immediately preceding the Reg SHO pilot program announcement. The two groups of firms exhibit similar mean values for all variables, except for some minor differences in *FIRM_AGE* and *DIV*. Overall, consistent with the random selection procedure of the SEC, pilot firms and control firms are very similar prior to the Reg SHO pilot program.

Panel C reports the results for univariate DiD tests examining our hypothesis. The mean of our CSR measure, *CSR*, during the three-year period preceding the pilot program (2001–2003) is -0.015 for pilot firms, which is 0.136 less than that for non-pilot firms. During the three-year period of the pilot program, mean *CSR* increases from -0.015 to

0.145 for pilot firms, while it decreases from 0.121 to -0.034 for non-pilot firms, which causes mean *CSR* to become 0.083 higher for pilot firms than for non-pilot firms. Untabulated results also show that, for all the CSR measures used in this paper, the difference between the mean value for pilot firms and control firms is negative prior to the Reg SHO pilot program, and it becomes positive during the Reg SHO pilot program.[9] These results provide some evidence that, when facing an increase in short selling pressure due to Reg SHO, managers have incentives to create a positive firm image by enhancing CSR performance.

[TABLE 1 HERE]

## 4. Empirical Results

Throughout this paper, we use two specifications: the first specification is the OLS regressions with robust standard errors adjusted for firm clustering, as in most of the prior literature on CSR; the second specification is estimated with the inclusion of firm fixed effects to control for unobserved time-invariant firm characteristics. We tabulate the regression results using two measures of CSR: the CSR measure adjusted for the number of strengths/concerns (Deng et al., 2013) and the raw CSR measure adjusted for industry median (Dhaliwal et al., 2011).

### *4.1. Main Results*

Table 2 reports the regression results based on Eq. (1). As shown in columns (1) to (4), the coefficient on $PILOT \times DUR$, $\beta_1$, is positive and significant at the one percent level across both the OLS and firm fixed effects specifications, which is consistent with the

[9] Except for *CSR_CON*, which we introduce in Section 4.2..

univariate DiD results reported in Panel C of Table 1. This finding is consistent with the prediction of our hypothesis that pilot firms enhance their CSR performance relative to control firms during the Reg SHO implementation period.

In terms of economic significance, the results in columns (1) and (3) indicate that our CSR measure, *CSR* (*CSR_ADJ*), is 0.256 (0.046) higher for the treatment group than for the control group during the three-year period of the pilot program compared to the three-year pre-pilot period. This corresponds to 12.52% (12.67%) of the standard deviation of *CSR* (*CSR_ADJ*) in the pooled sample, 2.044 (0.363). Controlling for firm fixed effects, the results in columns (2) and (4) indicate that, CSR (*CSR_ADJ*), is 0.170 (0.032) higher for the treatment group than for the control group during the three-year period of the pilot program compared to the three-year pre-pilot period. This corresponds to 8.32% (8.82%) of the standard deviation of *CSR* (*CSR_ADJ*) in the pooled sample. Consistent with prior research (e.g., Fang et al., 2015), the $R^2$ across all columns are low (3.4% to 8.7%), indicating that most of the cross-sectional differences in *CSR* are due to unmodeled factors

Overall, our results are consistent with our conjecture that managers have incentives to create a positive firm image by enhancing CSR performance in response to increasing short selling pressure.

### *4.2. Subcomponents of CSR*

The measure of a firm's CSR performance for our main test, *CSR* (or *CSR_ADJ*), is an aggregate measure that is equal to the firm's total strengths minus total weakness over various qualitative issue areas, to shed more light on how pilot firms enhance CSR

performance facing increasing short selling pressure, we examine the subcomponents of the aggregate CSR scores.

*4.2.1. CSR strength vs. CSR concern*

Prior studies suggest that a firm's effort is more likely to be captured by CSR strengths than CSR concerns as the latter are likely to be the outcome of other corporate activities, which is unrelated to corporate effort (Servaes and Tayamo, 2013; Dong et al., 2015). For example, a firm's poor scores in the environmental area (CSR concerns) is likely due to its corporate production technology in place, while the donation the firm made to local communities is more likely to reflect its effort to improve its performance in the community areas (CSR strengths). Thus, it is possible that, when facing increased short selling pressure, a firm's effort to improve CSR performance is mainly driven by increases in CSR strengths rather than decreases in concerns.

To test our conjecture, we split measures of CSR (*CSR* or *CSR_ADJ*) up into CSR strengths (*CSR_STR* or *CSR_STR_ADJ*) and CSR concerns (*CSR_CON* or *CSR_CON_ADJ*). *CSR_STR* (*CSR_CON*) is the sum of a firm's industry adjusted strength (concern) scores over community relations, humanity, diversity, employee relations, environment, and product characteristics. *CSR_STR_ADJ* (*CSR_CON_ADJ*) is the sum of a firm's strength (concern) scores based on Deng et al. (2013). The strength (concern) scores for each of the MSCI's evaluation dimensions (e.g., community relations, humanity, diversity, employee relations, environment, and product characteristics) are calculated by dividing the raw strength (concern) scores by respective number of strength (concern) indictors to derived adjusted strength scores for that dimension. We re-estimate Equation (1) using each of these subcomponents of CSR as the dependent variable. Table

3 respectively report the regression results using CSR strengths and CSR concerns as the dependent variables. Note that columns (1), (3) and (5) presents the coefficient estimates using the OLS regression and columns (2), (4) and (6) present the coefficient estimates using regression that controls for firm fixed effects.

Table 3 shows that, using CSR strengths (*CSR_STR* or *CSR_STR_ADJ*) as the dependent variable, the coefficients on *PILOT×DUR* are positive and significant, at less than 5 percent level for the OLS specification (columns (1) and (3)) and at less than the one percent level for the firm fixed effects specification (columns (2) and (4)). These results suggest that, facing increasing short-selling pressures, firms enhance CSR performance by increasing CSR strengths. Using CSR concerns (*CSR_CON* or *CSR_CON*) as the dependent variable, the coefficient on *PILOT×DUR* is negative across columns (5) to (8) and is only significant at less than the ten percent level for the firm fixed effects specification using *CSR_CON_ADJ* (column (8)). These results suggest that reducing CSR concerns do not seem to be the main driver that increases CSR.

Overall, our results are consistent with prior studies (e.g. Servaes and Tayamo, 2013; Dong et al., 2015) and suggest that firms try to improve their CSR performance during the Reg SHO implementation period and the improvement is more likely to be manifested in increased CSR strengths than in reduced concerns.

[TABLE 3 HERE]

*4.2.2. Stakeholder CSR vs. third-party CSR*

CSR is multidimensional concept that encompasses a variety of areas, such as the community, the environment, human rights and employees. While some of these areas relate to general society, others focus on stakeholders such as employees and consumers

(Servaes and Tamayo, 2013). To probe more into the CSR performance during the Reg SHO implementation period, we split measures of CSR (*CSR* or *CSR_ADJ*) up into stakeholder CSR that mainly focuses on key stakeholders (*CSR_STK* or *CSR_STK_ADJ*) and third-party CSR that mainly focuses on general society (*CSR_THIRD* or *CSR_THIRD_ADJ*). Specifically, *CSR_STK* (*CSR_THIRD*) is the sum of industry adjusted corporate social responsibility (CSR) scores over diversity, employees and products (community, environment and human rights). It is estimated by scaling the raw strength and concern scores of each category by the number of items of the strength and concern of that category in the year and then taking the net difference between adjusted strength and concern scores for that category. *CSR_STK_ADJ* (*CSR_THIRD_ADJ*) is the sum of corporate social responsibility (CSR) scores based on Deng et al. (2013). The concern (strength) scores for each of the MSCI’s evaluation dimensions，diversity, employees and products (community, environment and human rights), are calculated by dividing the raw concern (strength) scores by respective number of concern (strength) indicators to derive adjusted concern (strength) scores for that dimension. We then take the difference between the adjusted total strength scores and the adjusted total concern scores. We re-estimate Equation (1) using each of these subcomponents of CSR as the dependent variable. Table 4 respectively report the regression results using stakeholder CSR and third-party CSR as the dependent variables. Consistent with our examination of CSR strengths and concerns, columns (1), (3) and (5) presents the coefficient estimates using the OLS regression and columns (2), (4) and (6) present the coefficient estimates using regression that controls for firm fixed effects.

Table 4 shows that, using stakeholder CSR as the dependent variable (*CSR_STK* or *CSR_STK_ADJ*), the coefficients on *PILOT×DUR* are positive and significant at less than the one percent level across all specifications (columns (1) to (4)). Whereas, the coefficients on *PILOT×DUR* are not significant when the dependent variable is third-party CSR (*CSR_THIRD* or *CSR_THIRD_ADJ*). These results suggest that, the enhanced CSR performance documented during the Reg SHO period for the main test is mainly driven by improved performance in stakeholder CSR rather than third-third party.

[TABLE 4 HERE]

## 5. Additional tests

### *5.1. Stakeholder's CSR emphasis*

Prior studies suggest that the value of CSR differs in the degree of stakeholders' CSR emphasis. Marquis et al. (2007) argue that "Standards of appropriateness regarding the nature and level of corporate social action are embedded within local communities, and organizational conformity to these institutionalized practices yields systematic patterns that vary by community" (p. 926). When stakeholders place greater emphasis on corporate social responsibility related issues, a firm's CSR efforts are more likely to be appreciated by the stakeholders, and the stakeholders are likely to have stronger incentives to contribute resources and effort to the firm (Deng et al., 2013). To the extent that managers are aware of their stakeholder's CSR emphasis as well as of the potential payoff from firms' CSR performance, we expect that the enhancement in CSR performance for the pilot firms during the Reg SHO implementation period is more

pronounced for firms operating in an in environment that the CSR effort are likely to be emphasized by these firms' stakeholders.

To test our conjecture, we follow prior studies and proxy the degree of a firm's stakeholders' CSR emphasis based on whether the firm is headquartered in states controlled by the Democratic Party (blue states) or in states with high religiosity (e.g. Di Giuli and Kostovetsky, 2014; Deng et al., 2013; Rubin, 2008).[10,11] A firm's religiosity is measured as the average of the ratio of the number of religious adherents in the firm's state to the total population in that state in 2000 and that of 2010.[12] The information on the political leaning of a firm's headquarter state (e.g. blue states or not) is obtained from internet websites.[13] We then classify pilot-during firm-years (*PILOT×DUR*) into high (blue) versus low-religiosity (red state) groups according to the religiosity ratio (blue state status) for each year of the sample. We construct two sets of indicator variables: *PILOT×DUR_HIGHR* versus *PILOT×DUR_LOWR* and *PILOT×DUR_BLUE* versus *PILOT×DUR_RED.* The variable *PILOT×DUR_HIGHR* (*PILOT×DUR_LOWR*) equals one if a firm is a pilot firm and is headquartered in a state with the above (below) median religiosity during the Reg SHO period, and zero otherwise. The variable *PILOT×DUR_BLUE* (*PILOT×DUR_RED*) equals one if a firm is a pilot firm and is

[10] Prior studies find significant geographic clustering in the views of outside stakeholders (see Porter, 1998, 2000). Given that a firm's headquarter is in general close to its core business (Pirinsky and Wang, 2006), we expect a firm to take the views of these stakeholder into consideration when forming their CSR decisions.

[11] Prior studies find that democratic voters and individuals with deep religious belief tend to place more emphasis on CSR-related issues such as environmental protection, anti-discrimination laws and employee protection (Hilary and Hui, 2009; Kumar et al., 2011; Di Giuli and Kostovetsky, 2014; Deng et al., 2013; Rubin, 2008).

[12] Every ten years, the Association of Religion Data Archive provides information on religiosity. We use the average religion ratio based on 2000 and 2010 data because our sample period (2001-2007) falls between this two years.

[13] We obtain the list of blue states based on the information on presidential election results at state level, which is collected from two sources: (1) www.uselectionatlas.org; and (2) http://en.wikipedia.org/wiki/File:Red_state_and blue_state.svg.

headquartered in a blue (red) state during the Reg SHO period, and zero otherwise. We then replace *PILOT×DUR* in Equation (1) with *PILOT×DUR_HIGHR* and *PILOT×DUR_LOWR* (*PILOT×DUR_BLUE* and *PILOT×DUR_RED*)

Panel A (B) of Table 5 reports the regression results of the impact of Reg SHO on firm's CSR (*CSR* or *CSR_ADJ*) for high (blue) versus low religiosity (red states). Columns (1) and (3) respectively present the coefficient estimates using the OLS regression and columns (2) and (4) present the coefficient estimates using regression that controls for firm fixed effects. Panel A (B) shows that, across all columns, the coefficients on *PILOT×DUR_HIGHR* (*PILOT×DUR_BLUE*) are positive and significant, while the coefficients on *PILOT×DUR_LOWR* (*PILOT×DUR_RED*) are positive and insignificant. These results suggest that the positive impact of short selling pressure on firm's CSR performance is more pronounced in an environment where the firm's CSR activities are more likely to be appreciated by its stakeholders.

*5.2. Post-program*

On July 6, 2007, the SEC eliminated the uptick rule for all exchange-listed firms. As a result, short-sale constrains for control firms should decrease to a similar level as those for the pilot firms after July 2007. We expand our sample period to year 2010 and expand Equation (1) by including time indicator *POST* and its interaction with *PILOT* (*PILOT×POST*) to check whether the CSR scores of the pilot firms revert to pre-program levels after the pilot program ends. Specifically, *POST* equals one if a firm-year's fiscal end falls between January 1, 2008 and December 31, 2010, and zero otherwise. The definition of *PILOT* and other variables are the same as in Equation (1). Table 6 reports the results using both the OLS regressions and the regression with firm fixed effects.

Across columns (1) to (4), the coefficient on *PILOT*×*POST* is insignificant, suggesting a reverting pattern as the difference between the pilot and non-pilot firms' *CSR* score after the pilot program is not statistically different from that before the program.[14]

[TABLE 6 HERE]

*5.3. CSR disclosure*

Our results thus far are consistent with our argument that managers have incentives to create a positive firm image by enhancing CSR performance to deter short sellers. To add more credence to our argument, we examine whether managers actively convey the information relating to their firms' CSR activities to potential audiences in the market (including short sellers). Specifically, we compare the change in the pilot firms' likelihood of issuing standalone CSR reports before and after the Reg SHO period, with that of the control firms by estimating the following model:

$$DISCLOSURE_{it} = \beta_0 + \beta_1 PILOT_i \times DUR_t + \beta_2 DUR_t + \beta_3 PILOT_i + \beta_4 SIZE_{it-1} + \beta_5 LEVERAGE_{it-1} + \beta_6 MB_{it-1} + \beta_7 ROA_{it-1} + \beta_8 LIQUIDITY_{it-1} + \beta_9 DIV_{it-1} + \beta_{10} COVERAGE_{it-1} + \beta_{11} CSR_{it-1} + \beta_{12} FORCAST_{it-1} + \varepsilon_{it} \quad (2)$$

where *DISCLOSURE* is an indicator variable that equals one if a firm issued a standalone CSR report during the year, and zero otherwise.[15] See Appendix for detailed definitions of all the other variables.

[TABLE 7 HERE]

[14] The CSR measure we use, *CSR* is industry-adjusted. As a result, it is possible that our finding that pilot firms' CSR scores reverted to pre-program levels after the pilot program could reflect changes in nonpilot firms' CSR scores rather than changes in pilot firms' CSR scores. So in untabulated results, we replace the industry-adjust CSR measures with the raw CSR scores and find consistent results.

[15] We collect standalone CSR reports for U.S. listed companies from the leading CSR report archive collections, Corporate Social Responsibility Newswire and CorporateRegister.com, and from our own Internet searches.

Table 7 shows that the coefficient on *PILOT*×*DUR* is positive and significant at the ten percent level, which suggests that managers are more likely to disclose information on their firms' CSR activities when facing increased short-selling pressures.

## 6. Conclusions

In this study, we examine the impact of short selling on firm's CSR performance. Using Reg SHO as a source of exogenous shock to short selling pressure, we find that managers significantly increase firms' CSR performance when facing increasing short selling pressure. The increases in CSR are mainly driven by stakeholder CSR, rather than third party CSR; and by improvements in CSR strengths, rather than reductions in CSR concerns. Moreover, the positive impact of short selling pressure on firms' CSR performance is more pronounced in an environment where the firms' CSR activities are emphasized by their stakeholders. For example, we find that the positive impact of short selling pressure is stronger for firms headquarter in "blue" (liberal or Democratic-leaning) states than those headquarter in "red" (conservative or Republican-leaning) states, and for firms that are subject to more rather than less religious influence.

Finally, we find that firms actively convey the information relating to their firms' CSR activities to potential audiences in the market (including short sellers) by disclosing standalone CSR reports during the implementation of Reg SHO period. Overall, these results are consistent with our conjecture that, as a response to increasing short selling pressure, managers strategically alter CSR performance to deter short sellers by creating create a positive firm image.

Our study adds to the extant literature that examines the real effects of secondary financial markets. Our results suggest that, while short selling is generally not welcome

by the managers, an unintended consequence of increasing short selling pressure is that managers are incentivized to enhance their firms' non-financial performance. Our study also extend prior studies on the literature on determinants of CSR and how firms strategically use CSR to achieve its corporate goals. Our study suggest that short selling pressure is a significant contributor to a firm's CSR decisions. Rather than increasing CSR to meet the demands of various stakeholders as documented in prior studies, firms use CSR as a tool to deter short sellers.

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**Appendix: Variable definitions**

**Dependent variables**

*CSR* is the sum of a firm's CSR scores calculated as a firm's total strengths minus total weaknesses, based on MSCI's evaluations for community relations, humanity, diversity, employee relations, environment, and product characteristics. Following Dhaliwal et al. (2011), we adjust the CSR scores by industry median to make them comparable across industries.

*CSR_ADJ* is the sum of a firm's CSR scores calculated based on Deng et al. (2013). The concern (strength) scores for each of the MSCI's evaluation dimensions (e.g., community relations, humanity, diversity, employee relations, environment, and product characteristics) are calculated by dividing the raw concern (strength) scores by respective number of concern (strength) indicators to derive adjusted concern (strength) scores for that dimension. We then take the difference between the adjusted total strength scores and the adjusted total concern scores.

*CSR_CON* is the sum of a firm's industry adjusted concern scores over community relations, humanity, diversity, employee relations, environment, and product characteristics.

*CSR_STR* is the sum of a firm's industry adjusted strength scores over community relations, humanity, diversity, employee relations, environment, and product characteristics.

*CSR_CON_ADJ* is the sum of a firm's concern scores based on Deng et al. (2013). The concern scores for each of the MSCI's evaluation dimensions (e.g., community relations, humanity, diversity, employee relations, environment, and product characteristics) are calculated by dividing the raw concern scores by respective number of concern indictors to derived adjusted concern scores for that dimension.

*CSR_STR_ADJ* is the sum of a firm's strength scores based on Deng et al. (2013). The strength scores for each of the MSCI's evaluation dimensions (e.g., community relations, humanity, diversity, employee relations, environment, and product characteristics) are calculated by dividing the raw strength scores by respective number of strength indictors to derived adjusted strength scores for that dimension.

*CSR_STK* is the sum of industry adjusted corporate social responsibility (CSR) scores over diversity, employees and products. It is estimated by scaling the raw strength and concern scores of each category by the number of items of the strength and concern of that category in the year and then taking the net difference between adjusted strength and concern scores for that category.

*CSR_THIRD* is the sum of industry adjusted corporate social responsibility (CSR) scores over community, environment and human rights. It is estimated by scaling the raw strength and concern scores of each category by the number of items of the strength

and concern of that category in the year and then taking the net difference between adjusted strength and concern scores for that category.

*CSR_STK_ADJ* is the sum of corporate social responsibility (CSR) scores based on Deng et al. (2013). The concern (strength) scores for each of the MSCI's evaluation dimensions，diversity, employees and products， are calculated by dividing the raw concern (strength) scores by respective number of concern (strength) indicators to derive adjusted concern (strength) scores for that dimension. We then take the difference between the adjusted total strength scores and the adjusted total concern scores.

*CSR_THIRD_ADJ* is the sum of corporate social responsibility (CSR) scores based on Deng et al. (2013). The concern (strength) scores for each of the MSCI's evaluation dimensions，community, environment and human rights, are calculated by dividing the raw concern (strength) scores by respective number of concern (strength) indicators to derive adjusted concern (strength) scores for that dimension. We then take the difference between the adjusted total strength scores and the adjusted total concern scores.

*DISCLOSURE* is an indicator variable that equals one if a firm issued a standalone CSR report during the year, and zero otherwise.

**Key independent variables**

*PILOT* is an indicator variable that equals one if the firm's stock is designated as pilot stock in the Regulation SHO's pilot program, and zero otherwise. Source: http://www.sec.gov/spotlight/shopilot.htm.

*DUR* is an indicator variable that equals one if a firm's fiscal year end falls between January 1, 2005 and December 31, 2007, and zero otherwise.

*POST* is an indicator variable that equals one if a firm's fiscal year end falls between January 1, 2008 and December 31, 2010, and zero otherwise.

**Control variables**

*SIZE* is the log of the market value of the firm (item 25 × item 199).

*LEVERAGE* is long-term debt (item 9) over total asset (item 6).

*MB* is the ratio of the market value of equity (item 25 × item 199) to book value of total equity (item 60).

*ROA* is income before extraordinary items (item 18) divided by lagged total assets (item 6).

*FIRM_AGE* is the difference between the first year when the firm appears in CRSP and the current year.

*LIQUIDITY* is total common shares traded during the fiscal year (item 28) over total common shares outstanding (item 25).

*DIV* is an indicator variable that equals one if the firm pays out dividends during the fiscal year (i.e., item 21 is greater than zero), and zero otherwise.

*LITIGATION* is an indicator variable as defined in Dhaliwal (2011), which equals 1 if the firm operates in a high-litigation industry (i.e., SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370), and 0 otherwise.

*GLOBAL* is an indicator variable as defined in Dhaliwal (2011), which equals 1 if the firm has foreign income (i.e., item 273 greater than zero), and zero otherwise.

*COVERAGE* is an indicator variable that equals one if the firm is covered by at least one analyst during the fiscal year, and zero otherwise. Source: I/B/E/S.

*FORECAST* is an indicator variable that equals one if the company issues one or more management forecast during the fiscal year, and zero otherwise.

**Variables in additional tests**

*PILOT×DUR_HIGHR* is an indicator variable that equals one if a firm is a pilot firm and is headquartered in a state with the above median religiosity during the Reg SHO period, and zero otherwise. A firm's religiosity is measured as the average of the ratio of the number of religious adherents in the firm's state to the total population in that state in 2000 and that of 2010.

*PILOT×DUR_LOWR* is an indicator variable that equals one if a firm is a pilot firm and is headquartered in a state with the below median religiosity during the Reg SHO period, and zero otherwise. A firm's religiosity is measured as the average of the ratio of the number of religious adherents in the firm's state to the total population in that state in 2000 and that of 2010.

*PILOT×DUR_BLUE* equals one if a firm is a pilot firm and is headquartered in a blue state during the Reg SHO period, and zero otherwise.

*PILOT×DUR_RED* equals one if a firm is a pilot firm and is headquartered in a red state during the Reg SHO period, and zero otherwise.

**Table 1**
Descriptive statistics

Panel A: Firm characteristics - full sample

| | Mean | SD | 25% | Median | 75% |
|---|---|---|---|---|---|
| *CSR* | 0.082 | 2.044 | -1.000 | 0.000 | 1.000 |
| *CSR_ADJ* | -0.014 | 0.363 | -0.207 | 0.000 | 0.200 |
| *SIZE* | 7.384 | 1.482 | 6.280 | 7.205 | 8.272 |
| *MB* | 3.387 | 3.711 | 1.661 | 2.531 | 4.076 |
| *LEVERAGE* | 0.181 | 0.184 | 0.005 | 0.150 | 0.285 |
| *ROA* | 0.043 | 0.139 | 0.015 | 0.058 | 0.107 |
| *FIRM_AGE* | 21.911 | 16.288 | 9.000 | 15.000 | 35.000 |
| *LIQUIDITY* | 2.227 | 1.810 | 1.024 | 1.710 | 2.812 |
| *DIV* | 0.467 | 0.499 | 0.000 | 0.000 | 1.000 |
| *LITIGATION* | 0.296 | 0.457 | 0.000 | 0.000 | 1.000 |
| *GLOBAL* | 0.541 | 0.498 | 0.000 | 1.000 | 1.000 |
| *COVERAGE* | 2.042 | 1.085 | 1.609 | 2.303 | 2.833 |
| n | | | 7,966 | | |

Panel B: Firm characteristics of the treatment and control groups in 2003

| | Pilot Firms (n=617) | | Control Firms (n=1262) | | | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Diff. | t-stat |
| *CSR* | -0.105 | 1.729 | 0.046 | 1.895 | -0.152 | -1.47 |
| *CSR_ADJ* | -0.079 | 0.345 | -0.057 | 0.346 | -0.022 | 1.31 |
| *SIZE* | 6.901 | 1.526 | 6.829 | 1.525 | 0.073 | 0.97 |
| *MB* | 0.187 | 0.182 | 0.180 | 0.188 | 0.007 | 0.73 |
| *LEVERAGE* | 2.956 | 3.233 | 2.729 | 3.222 | 0.227 | 1.43 |
| *ROA* | 0.023 | 0.145 | 0.013 | 0.148 | 0.010 | 1.41 |
| *FIRM_AGE* | 21.303 | 15.966 | 19.605 | 15.636 | 1.698** | 2.19 |
| *LIQUIDITY* | 1.991 | 1.790 | 2.105 | 1.854 | -0.114 | -1.26 |
| *DIV* | 0.449 | 0.498 | 0.399 | 0.490 | 0.050** | 2.05 |
| *LITIGATION* | 0.327 | 0.470 | 0.306 | 0.461 | 0.022 | 0.94 |
| *GLOBAL* | 0.475 | 0.500 | 0.479 | 0.500 | -0.005 | -0.18 |
| *COVERAGE* | 1.928 | 1.115 | 1.897 | 1.120 | 0.031 | 0.56 |

Panel C: CSR scores before and during the pilot program

| | Pilot Firms (n=617) | | | Control Firms (n=1262) | | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | n | Mean | SD | n | Diff. | t-stat |
| *CSR* | | | | | | | | |
| Pre (2001-2003) | -0.015 | 1.807 | 1047 | 0.121 | 2.039 | 2183 | -0.136 | -1.84 |
| Dur (2005-2007) | 0.156 | 2.014 | 1530 | 0.052 | 2.131 | 3206 | 0.104 | 1.60 |
| *CSR_ADJ* | | | | | | | | |
| Pre (2001-2003) | -0.056 | 0.343 | 1047 | -0.034 | 0.362 | 2183 | -0.022 | -1.63 |
| Dur (2005-2007) | 0.163 | 0.361 | 1530 | -0.002 | 0.371 | 3206 | 0.019 | 1.43 |

This table reports distribution of the variables in the final sample of our main test. See Appendix A for variable definitions.

**Table 2**
Changes in CSR performance around the Reg SHO experiment

| | *Dep. = CSR* | | *Dep. = CSR_ADJ* | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *PILOT×DUR* | 0.265*** | 0.170*** | 0.046*** | 0.032*** |
| | (2.76) | (2.86) | (2.65) | (2.82) |
| *DUR* | -0.097 | 0.027 | -0.028 | -0.012 |
| | (-0.67) | (0.28) | (-1.06) | (-0.66) |
| *PILOT* | -0.193*** | | -0.029** | |
| | (-2.59) | | (-2.13) | |
| *SIZE* | 0.250*** | 0.081** | 0.008** | 0.010 |
| | (12.21) | (2.17) | (2.07) | (1.43) |
| *LEVERAGE* | -0.525*** | -0.235 | -0.076*** | -0.026 |
| | (-3.92) | (-1.38) | (-3.12) | (-0.81) |
| *MB* | 0.021*** | -0.009 | 0.006*** | -0.001 |
| | (3.18) | (-1.63) | (4.85) | (-1.14) |
| *ROA* | 0.421** | 0.258 | 0.109*** | 0.062* |
| | (2.32) | (1.44) | (3.31) | (1.83) |
| *FIRM_AGE* | -0.001 | 0.177*** | -0.001** | 0.021*** |
| | (-0.38) | (7.84) | (-2.54) | (4.99) |
| *LIQUIDITY* | -0.034** | -0.026* | -0.002 | -0.006** |
| | (-2.43) | (-1.73) | (-0.84) | (-2.08) |
| *DIV* | -0.002 | 0.010 | 0.013 | -0.004 |
| | (-0.04) | (0.15) | (1.28) | (-0.30) |
| *LITIGATION* | 0.222** | | 0.037** | |
| | (2.24) | | (2.07) | |
| *GLOBAL* | 0.147*** | -0.089 | 0.016* | -0.010 |
| | (2.82) | (-1.28) | (1.69) | (-0.79) |
| *COVERAGE* | 0.146*** | -0.064** | 0.031*** | -0.004 |
| | (6.29) | (-1.98) | (7.27) | (-0.60) |
| Constant | -1.990*** | -4.416*** | -0.027 | -0.542*** |
| | (-4.27) | (-7.89) | (-0.32) | (-5.11) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | | Yes | |
| Firm Fixed Effects | | Yes | | Yes |
| Adjusted $R^2$ | 0.087 | 0.034 | 0.047 | 0.043 |
| n | 7,966 | 7,966 | 7,966 | 7,966 |

This table presents results on changes in CSR performance around the Reg SHO experiment. All continuous independent variables are winsorized at the top and bottom one-percentiles. The t-values are reported in parentheses. The t-values in column (1) and (3) are based on standard errors clustered by firm.*,**,*** indicate that the estimated coefficient is statistically significant at the 10, 5 and 1 percent levels, respectively. See Appendix A for variable definitions.

**Table 3**
Changes in CSR strengths and CSR concerns around the Reg SHO experiment

| | *Dep. = CSR_STR* | | *Dep. = CSR_STR_ADJ* | | *Dep. = CSR_CON* | | *Dep. = CSR_CON_ADJ* | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *PILOT×DUR* | 0.175** | 0.126*** | 0.025** | 0.019*** | -0.093 | -0.069 | -0.025 | -0.019* |
| | (2.15) | (2.77) | (2.18) | (2.95) | (-1.52) | (-1.60) | (-1.60) | (-1.80) |
| *DUR* | -0.206* | -0.140* | -0.028 | -0.017 | 0.009 | -0.001 | 0.003 | 0.004 |
| | (-1.67) | (-1.90) | (-1.59) | (-1.61) | (0.10) | (-0.02) | (0.17) | (0.23) |
| *PILOT* | -0.192*** | | -0.026*** | | 0.030 | | 0.009 | |
| | (-3.05) | | (-2.89) | | (0.64) | | (0.88) | |
| *SIZE* | 0.729*** | 0.108*** | 0.101*** | 0.015*** | 0.411*** | 0.037 | 0.080*** | 0.005 |
| | (41.99) | (3.75) | (41.47) | (3.56) | (31.16) | (1.37) | (27.31) | (0.90) |
| *LEVERAGE* | -0.480*** | 0.027 | -0.071*** | 0.004 | -0.038 | -0.262** | -0.007 | -0.031 |
| | (-4.22) | (0.20) | (-4.42) | (0.23) | (-0.44) | (-2.14) | (-0.36) | (-1.15) |
| *MB* | -0.015*** | -0.005 | -0.002** | -0.001 | -0.034*** | -0.001 | -0.007*** | 0.001 |
| | (-2.74) | (-1.17) | (-2.46) | (-1.09) | (-8.21) | (-0.26) | (-7.36) | (0.60) |
| *ROA* | -0.898*** | -0.406*** | -0.126*** | -0.058*** | -1.055*** | -0.441*** | -0.200*** | -0.099*** |
| | (-5.85) | (-2.97) | (-5.85) | (-3.00) | (-9.16) | (-3.44) | (-7.83) | (-3.45) |
| *FIRM_AGE* | 0.018*** | 0.286*** | 0.002*** | 0.040*** | 0.016*** | 0.089*** | 0.003*** | 0.014*** |
| | (11.92) | (16.58) | (11.67) | (16.35) | (14.59) | (5.44) | (11.73) | (3.89) |
| *LIQUIDITY* | -0.065*** | -0.019 | -0.009*** | -0.002 | -0.017* | 0.034*** | -0.005** | 0.006*** |
| | (-5.51) | (-1.63) | (-5.66) | (-1.46) | (-1.93) | (3.12) | (-2.45) | (2.64) |
| *DIV* | -0.024 | 0.095** | -0.002 | 0.011 | 0.014 | 0.132*** | -0.009 | 0.017* |
| | (-0.51) | (1.98) | (-0.26) | (1.54) | (0.39) | (2.90) | (-1.12) | (1.69) |
| *LITIGATION* | 0.167** | | 0.027** | | -0.030 | | -0.005 | |
| | (1.99) | | (2.28) | | (-0.47) | | (-0.34) | |
| *GLOBAL* | 0.203*** | 0.028 | 0.026*** | 0.003 | 0.054 | 0.042 | 0.010 | 0.005 |
| | (4.61) | (0.52) | (4.17) | (0.39) | (1.64) | (0.83) | (1.41) | (0.44) |
| *COVERAGE* | 0.042** | -0.074*** | 0.006** | -0.010*** | -0.108*** | -0.077*** | -0.025*** | -0.015*** |
| | (2.15) | (-2.98) | (2.31) | (-2.94) | (-7.26) | (-3.25) | (-7.45) | (-2.85) |
| Constant | -5.444*** | -6.524*** | -0.738*** | -0.908*** | -3.155*** | -1.853*** | -0.663*** | -0.303*** |
| | (-13.79) | (-15.77) | (-13.30) | (-15.43) | (-10.54) | (-4.80) | (-9.97) | (-3.52) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | | Yes | | Yes | | Yes | |
| Firm Fixed Effects | | Yes | | Yes | | Yes | | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Adjusted $R^2$ | 0.335 | 0.240 | 0.328 | 0.241 | 0.227 | 0.063 | 0.184 | 0.042 |
| n | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 |

This table presents results on changes in CSR concerns and CSR strengths around the Reg SHO experiment. All continuous independent variables are winsorized at the top and bottom one-percentiles. The t-values are reported in parentheses. The t-values in column (1), (3), (5) and (7) are based on standard errors clustered by firm.*,**,*** indicate that the estimated coefficient is statistically significant at the 10, 5 and 1 percent levels, respectively. See Appendix A for variable definitions.

**Table 4**
Changes in stakeholder CSR and third-party CSR around the Reg SHO experiment

| | *Dep. = CSR_STK* | | *Dep. = CSR_STK_ADJ* | | *Dep. = CSR_THIRD* | | *Dep. = CSR_THIRD_ADJ* | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *PILOT×DUR* | 0.237*** | 0.170*** | 0.048*** | 0.038*** | 0.016 | -0.010 | 0.002 | -0.002 |
| | (3.10) | (3.42) | (3.18) | (3.81) | (0.36) | (-0.34) | (0.33) | (-0.51) |
| *DUR* | -0.012 | 0.090 | -0.017 | -0.006 | -0.074 | -0.038 | -0.010 | -0.004 |
| | (-0.10) | (1.12) | (-0.76) | (-0.38) | (-1.10) | (-0.84) | (-0.97) | (-0.65) |
| *PILOT* | -0.156*** | | -0.027** | | -0.033 | | -0.004 | |
| | (-2.63) | | (-2.34) | | (-0.95) | | (-0.83) | |
| *SIZE* | 0.286*** | 0.161*** | 0.018*** | 0.023*** | -0.038*** | -0.082*** | -0.010*** | -0.012*** |
| | (17.51) | (5.13) | (5.58) | (3.63) | (-3.98) | (-4.63) | (-7.21) | (-4.62) |
| *LEVERAGE* | -0.493*** | -0.223 | -0.072*** | -0.022 | -0.049 | 0.001 | -0.006 | -0.003 |
| | (-4.61) | (-1.56) | (-3.43) | (-0.77) | (-0.79) | (0.02) | (-0.68) | (-0.22) |
| *MB* | 0.010* | -0.007 | 0.004*** | -0.001 | 0.011*** | -0.003 | 0.002*** | -0.000 |
| | (1.84) | (-1.60) | (3.75) | (-1.20) | (3.50) | (-1.00) | (3.99) | (-0.86) |
| *ROA* | 0.244* | 0.201 | 0.070** | 0.036 | 0.231*** | 0.135 | 0.038*** | 0.019 |
| | (1.69) | (1.34) | (2.48) | (1.20) | (2.75) | (1.60) | (3.05) | (1.52) |
| *FIRM_AGE* | 0.002* | 0.118*** | -0.000 | 0.015*** | -0.003*** | 0.056*** | -0.001*** | 0.008*** |
| | (1.71) | (6.23) | (-0.88) | (3.96) | (-3.61) | (5.32) | (-4.75) | (4.84) |
| *LIQUIDITY* | -0.016 | -0.028** | 0.000 | -0.005* | -0.022*** | -0.014** | -0.002** | -0.002 |
| | (-1.44) | (-2.22) | (0.08) | (-1.92) | (-3.34) | (-2.00) | (-2.51) | (-1.43) |
| *DIV* | 0.053 | 0.040 | 0.022** | 0.003 | -0.063** | -0.044 | -0.010** | -0.006 |
| | (1.21) | (0.76) | (2.57) | (0.24) | (-2.46) | (-1.47) | (-2.56) | (-1.41) |
| *LITIGATION* | 0.089 | | 0.018 | | 0.133*** | | 0.018*** | |
| | (1.12) | | (1.18) | | (2.90) | | (2.66) | |
| *GLOBAL* | 0.112*** | -0.056 | 0.009 | -0.009 | 0.038 | -0.027 | 0.006 | -0.003 |
| | (2.71) | (-0.97) | (1.17) | (-0.72) | (1.58) | (-0.81) | (1.60) | (-0.70) |
| *COVERAGE* | 0.092*** | -0.035 | 0.024*** | 0.002 | 0.053*** | -0.037** | 0.008*** | -0.006*** |
| | (4.97) | (-1.28) | (6.52) | (0.37) | (4.93) | (-2.45) | (4.77) | (-2.63) |
| Constant | -2.502*** | -3.830*** | -0.143** | -0.513*** | -0.318 | -0.555** | 0.001 | -0.070* |
| | (-6.74) | (-8.17) | (-1.96) | (-5.43) | (-1.47) | (-2.11) | (0.02) | (-1.79) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | | Yes | | Yes | | Yes | |
| Firm Fixed Effects | | Yes | | Yes | | Yes | | Yes |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Adjusted $R^2$ | 0.114 | 0.040 | 0.052 | 0.054 | 0.092 | 0.016 | 0.096 | 0.015 |
| n | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 | 7,966 |

This table presents results on changes in stakeholder CSR and third-party CSR around the Reg SHO experiment. All continuous independent variables are winsorized at the top and bottom one-percentiles. The t-values are reported in parentheses. The t-values in column (1), (3), (5) and (7) are based on standard errors clustered by firm. *,**,*** indicate that the estimated coefficient is statistically significant at the 10, 5 and 1 percent levels, respectively. See Appendix A for variable definitions.

**Table 5**
Changes in CSR performance around the Reg SHO experiment for high versus low stakeholder emphasis

Panel A: High versus low religiosity

| | *Dep. = CSR* (1) | *Dep. = CSR* (2) | *Dep. = CSR_ADJ* (3) | *Dep. = CSR_ADJ* (4) |
|---|---|---|---|---|
| *PILOT×DUR_HIGHR* | 0.294*** | 0.181** | 0.049*** | 0.032** |
| | (2.98) | (2.53) | (2.63) | (2.34) |
| *PILOT×DUR_LOWR* | 0.159 | 0.133* | 0.029 | 0.023 |
| | (1.59) | (1.82) | (1.55) | (1.62) |
| *DUR* | -0.030 | 0.051 | -0.014 | -0.008 |
| | (-0.23) | (0.56) | (-0.55) | (-0.45) |
| *PILOT* | -0.128* | | -0.018 | |
| | (-1.90) | | (-1.46) | |
| Control Variables | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | | Yes | |
| Firm Fixed Effects | | Yes | | Yes |
| Adjusted $R^2$ | 0.072 | 0.028 | 0.042 | 0.039 |
| n | 7,966 | 7,966 | 7,966 | 7,966 |

Panel B: Blue versus red states

| | *Dep. = CSR* (1) | *Dep. = CSR* (2) | *Dep. = CSR_ADJ* (3) | *Dep. = CSR_ADJ* (4) |
|---|---|---|---|---|
| *PILOT×DUR_BLUE* | 0.364*** | 0.238*** | 0.065*** | 0.043*** |
| | (3.46) | (3.29) | (3.38) | (3.16) |
| *PILOT×DUR_RED* | 0.125 | 0.076 | 0.020 | 0.016 |
| | (1.10) | (0.92) | (0.98) | (1.01) |
| *DUR* | -0.099 | 0.028 | -0.028 | -0.012 |
| | (-0.68) | (0.29) | (-1.07) | (-0.65) |
| *PILOT* | -0.193*** | | -0.029** | |
| | (-2.59) | | (-2.13) | |
| Control Variables | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | | Yes | |
| Firm Fixed Effects | | Yes | | Yes |
| Adjusted $R^2$ | 0.087 | 0.035 | 0.047 | 0.043 |
| n | 7,966 | 7,966 | 7,966 | 7,966 |

This table presents results on changes in CSR performance around the Reg SHO experiment for high versus low stakeholder emphasis. Panel A (B) presents the regression results using religiosity (blue or red states). All continuous independent variables are winsorized at the top and bottom one-percentiles. The t-values are reported in parentheses. The t-values in column (1) and (3) are based on standard errors clustered by firm*,**,*** indicate that the estimated coefficient is statistically significant at the 10, 5 and 1 percent levels, respectively. See Appendix A for variable definitions.

**Table 6**
Changes in CSR performance around the end of the Reg SHO experiment

| | *Dep. = CSR* | | *Dep. = CSR_ADJ* | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *PILOT×DUR* | 0.241** | 0.152** | 0.039** | 0.026** |
| | (2.33) | (2.33) | (2.10) | (2.10) |
| *PILOT×POST* | 0.166 | 0.016 | 0.029 | 0.006 |
| | (1.55) | (0.24) | (1.50) | (0.49) |
| *DUR* | 1.009*** | -2.865*** | 0.097* | -0.487*** |
| | (3.46) | (-5.66) | (1.84) | (-5.08) |
| *POST* | 0.989*** | -2.966*** | 0.109** | -0.484*** |
| | (3.99) | (-5.95) | (2.44) | (-5.12) |
| *PILOT* | -0.181** | | -0.026* | |
| | (-2.20) | | (-1.73) | |
| *SIZE* | 0.311*** | 0.014 | 0.019*** | 0.004 |
| | (17.85) | (0.53) | (6.17) | (0.69) |
| *LEVERAGE* | -0.403*** | -0.119 | -0.060*** | -0.015 |
| | (-3.57) | (-0.90) | (-2.92) | (-0.61) |
| *MB* | 0.023*** | -0.009** | 0.006*** | -0.001* |
| | (4.04) | (-2.06) | (5.62) | (-1.68) |
| *ROA* | 0.162 | 0.450*** | 0.076*** | 0.069*** |
| | (1.04) | (3.23) | (2.71) | (2.62) |
| *FIRM_AGE* | 0.003** | 0.493*** | -0.000 | 0.072*** |
| | (2.10) | (9.80) | (-0.91) | (7.55) |
| *LIQUIDITY* | -0.018 | 0.005 | 0.001 | -0.000 |
| | (-1.55) | (0.45) | (0.36) | (-0.22) |
| *DIV* | 0.018 | 0.021 | 0.018** | 0.004 |
| | (0.39) | (0.39) | (2.09) | (0.42) |
| *LITIGATION* | 0.254*** | | 0.042*** | |
| | (3.02) | | (2.77) | |
| *GLOBAL* | 0.152*** | -0.106* | 0.020** | -0.012 |
| | (3.33) | (-1.93) | (2.41) | (-1.16) |
| *COVERAGE* | 0.150*** | 0.003 | 0.031*** | 0.009* |
| | (7.03) | (0.10) | (8.06) | (1.80) |
| Constant | -2.844*** | -9.497*** | -0.191** | -1.388*** |
| | (-6.90) | (-11.06) | (-2.56) | (-8.53) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | | Yes | |
| Firm Fixed Effects | | Yes | | Yes |
| Adjusted $R^2$ | 0.104 | 0.053 | 0.053 | 0.043 |
| n | 12,333 | 12,333 | 12,333 | 12,333 |

This table presents results on changes in CSR performance around the end of the Reg SHO experiment. All continuous independent variables are winsorized at the top and bottom one-percentiles. The t-values are reported in parentheses. The t-values in column (1) and (3) are based on standard errors clustered by firm. *,**,*** indicate that the estimated coefficient is statistically significant at the 10, 5 and 1 percent levels, respectively. See Appendix A for variable definitions.

**Table 7**
Changes in the likelihood of CSR disclosure around the Reg SHO experiment

| | *Dep. = DISCLOSURE* |
|---|---|
| *PILOT×DUR* | 0.486* |
| | (1.71) |
| *DUR* | -0.650* |
| | (-1.76) |
| *PILOT* | -0.106 |
| | (-0.46) |
| *SIZE* | 0.821*** |
| | (5.62) |
| *LEVERAGE* | 0.143 |
| | (0.25) |
| *MB* | -2.725*** |
| | (-3.26) |
| *ROA* | 0.662*** |
| | (3.08) |
| *LIQUIDITY* | -0.282 |
| | (-0.86) |
| *DIV* | 0.666*** |
| | (3.37) |
| *COVERAGE* | -0.002 |
| | (-0.33) |
| *LAG_CSR* | 1.193*** |
| | (17.88) |
| *FORECAST* | 0.000 |
| | (1.18) |
| Constant | -33.226 |
| | (-0.08) |
| Year Fixed Effects | Yes |
| Industry Fixed Effects | Yes |
| n | 6,564 |

This table presents results on changes in the likelihood of CSR disclosure around the Reg SHO experiment. All continuous independent variables are winsorized at the top and bottom one-percentiles. The t-values based on standard errors clustered by firm are reported in parentheses. *,**,*** indicate that the estimated coefficient is statistically significant at the 10, 5 and 1 percent levels, respectively. See Appendix A for variable definitions.